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# Dangers involved in rapid opioid detoxification while using opioid antagonists: dehydration and renal failure

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## INTRODUCTION

The use of antagonist-accelerated opioid detoxification, both with and without general anaesthesia/sedation, is currently receiving a lot of attention in the media. There has been a gradual increase in both the use of these techniques and the number of studies conducted in the last decade (see Gowing *et al.* 2001; O'Connor & Kosten 1998). The techniques are described as safe and fast, and commercial providers claim high rates of success in opioid cessation. Drug users can even find recipes and manuals for rapid detoxification procedures at home, including recommendations for medication and dosages, on the Internet. Although rapid detoxification procedures followed by antagonist maintenance seem promising, little is known about the long-term effects (O'Connor & Kosten 1998). There is no consensus about the treatment and medication protocols and a broad variety of adjuvant medications to ameliorate withdrawal symptoms is being used. Additionally, the approach must be regarded as experimental, with both risks and benefits still uncertain (Gowing *et al.* 2001).

Adverse events (e.g. Pfab *et al.* 1999; San *et al.* 1995) and even deaths (e.g. Dyer 1998) connected to rapid detoxification procedures are hardly ever reported in the literature, let alone thoroughly investigated. The very few reports about such adverse events are typically related to rapid detoxification with general anaesthesia. Here, we report a case of dehydration and renal insufficiency during rapid opioid detoxification without general anaesthesia (RD).

## CASE PRESENTATION

A 37-year-old-male was motivated for a RD. He had been opioid-dependent for over 20 years and was currently enrolled in a methadone maintenance programme using 40 mg/day. Despite the methadone, he frequently used heroin (smoking) and occasionally cocaine.

Before initial detoxification, BP was 150/100 and body weight 85 kg. Laboratory data are displayed in Table 1. ECG was normal. RD was conducted according to American Psychiatric Association (APA) guidelines (APA 1995). The opioid antagonist naltrexone was administered in increasing single dosage: 12.5 mg/day on day 1, 25 mg/day on day 2 and up to 50 mg/day maintenance dose from day 3 onward. Once naltrexone is administrated, opioids are displaced from the opioid receptor, precipitating major acute withdrawal symptoms within 30 minutes, such as severe diarrhoea and vomiting. To ameliorate these symptoms, in this case clonidine (0.15 mg q.i.d., days 1 and 2), lorazepam (2 mg t.i.d., days 1 and 2), midazolam (15 mg/day, days 1 and 2), dexamethasone (6 mg/day 1) and ondansetron (8 mg t.i.d., days 1 and 2) were used. Because diarrhoea and vomiting did not subside and the patient's condition deteriorated slowly, the patient was admitted to the intensive

**Table 1.** Laboratory data.

| | Hb | Ht | BUN | Creat. | Ca | P | Na | K | CPK | MB |
|---|---|---|---|---|---|---|---|---|---|---|
| c.i.-0* | 9.2 | 0.44 | | 69 | | | 140 | 4.6 | | |
| c.i.-36** | 11.7 | 0.56 | 23.5 | 688 | 2.85 | 2.81 | 138 | 3.9 | 424 | 33 |
| c.i.-60*** | 9.2 | 0.44 | 28.4 | 401 | 2.20 | 1.55 | 135 | 3.1 | 275 | 10 |
| c.i.-84**** | 8.4 | 0.40 | 8.7 | 95 | | | 136 | 3.4 | | |
| | mmol/l | l/l | mmol/l | μmol/l | mmol/l | mmol/l | mmol/l | mmol/l | U/l | U/l |
| Ref.***** | 8.0–10.5 | 0.41–0.50 | 2.5–6.4 | 50–110 | 2.10–2.55 | 0.70–1.50 | 135–145 | 3.5–5.0 | 15–75 | <5% |

* Chemical indices (c.i.), prior to detoxification; ** 36 hours after initial detoxification/admission to hospital; *** 24 hours after admission to hospital; **** 48 hours after admission to hospital; ***** reference values.

care unit of a general hospital after 36 hours of detoxification.

On arrival at the hospital the patient was drowsy, his skin was cold and his extremities were cyanotic. BP was 110/70, HR 130/minute, temperature 38.7°C and body weight 70 kg. The patient appeared severely dehydrated. Laboratory analyses revealed abnormalities indicating acute renal insufficiency (Table 1).

After admission, the patient was rehydrated rapidly. During the first 24 hours, the patient was oliguric, but he recovered without a polyuric phase. Diarrhoea lasted for several days. Two weeks later, the patient was completely recovered and discharged from the hospital. A subsequent naltrexone maintenance programme failed to yield abstinence because of non-compliance, and currently he is enrolled again in a methadone maintenance programme.

## DISCUSSION

A fluid loss of approximately 15 l in only 36 hours suggests an 'active' fluid secretion process. We believe this patient deteriorated so severely because of major persistent withdrawal symptoms, which caused fluid loss. The transient renal failure was probably a result of severe fluid depletion.

In another pilot study, two patients suffered from transient renal failure (increase in plasma creatinine to 238.7 μmol/l and 671.8 μmol/l, respectively) during a rapid detoxification procedure with general anaesthesia (Pfab *et al.* 1999). The authors suggest a possible effect of opiate-antagonists, since studies show that naloxone can influence renal function (van Tilborg *et al.* 1995). On the basis of the latter article, it seems very unlikely that opiate-antagonists were directly responsible for dehydration and renal failure. The influence of naloxone on renal function should rather be a reverse effect: sodium and water retention (personal communication).

A new development for inhibiting active secretion in a RD is the use of octreotide (Bell *et al.* 1999), an octapeptide analogue to the hypothalamus hormone somatostatin, but which is longer-acting. Overall, octreotide is well tolerated. Side-effects are transient injection site pain site and transient gastrointestinal symptoms. The antisecretory and motility-inhibiting properties of octreotide in the gastroenteropancreatic endocrine system in a RD deserve further investigation.

This case shows that RD may lead to serious complications, such as dehydration (renal failure). Hence, an adequate symptomatic treatment, monitoring fluid balance, BP and renal functions seems mandatory. Because of the severity and clarity of this incident, we would like to stress the importance of detoxification in a clinical high care setting with extensive medical facilities available.

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